IN THE CLAIMS:

1. (Currently amended) Method for determining the distance between a point of an object to a specified ~~reference point, such as~~ a sensor, by measuring contrast values of the point that is represented in the working plane of the sensor~~, in particular~~ for a scanning profile determination of a material surface with a coordinate measuring instrument, wherein an optical system~~, which~~ comprises the sensor and is arranged in a probe that is displaceable relative to the object surface, is adjusted in relation to the object and wherein from the position of the optical system in relation to the object the distance or ~~and/or~~ its profile is determined, wherein in the imaging beam path of the optical system the contrast values of the depicted point are measured at the ends of at least two optical paths of different lengths,

characterized in that in the imaging beam path of the optical system at the end of at least two ~~three~~ optical paths of different lengths contrast distributions of the beams are determined according to the distance to the point of the object that is to be measured through at least one sensor and that a relationship is established between the resulting contrast distributions as well as that for determining the distance between the point to be measured and the reference point contrast values of the point, which is depicted via the at least three optical paths with different lengths, are measured at a specified distance and transformed to previously determined contrast distributions at the end of one of the optical paths.

2. (Original) Method according to claim 1, characterized in that

one sensor each is assigned to each of the optical paths of different lengths.

3. (Previously presented) Method according to claim 1, characterized in that the beam proceeding from the point is split into optical paths of different lengths through optical elements that are distributed in front of a sensor.

4. (Currently amended) Method according to claim 1, characterized in that flat face-plates of different thicknesses~~, which are arranged in a matrix shape,~~ can be used as the optical element.

5. (Previously presented) Method according to claim 1, characterized in that the sensor or its working field is divided into several measuring areas for simultaneous distance measuring of various areas of the object.

6. (Previously presented) Method according to claim 1, characterized in that the respective contrast distribution is adapted to a parabola, whose vertex corresponds to a contrast value, at which the point to be measured is sharply depicted on the working plane of the corresponding sensor.

7. (Previously presented) Method according to claim 1, characterized in that the contrast distributions, which are allocated to the optical paths with different lengths, run in an overlapping manner in such a way that in the measuring area contrast values are determined from a minimum number of contrast distributions for a distance that is to be measured, with this number being sufficient for calculating the contrast distribution for the sensor or optical path for a sharp depiction of the point to be measured via the selected optical path to the sensor.

8. (Previously presented) Method according to claim 1, characterized in that

an image sensor or a multiple-chip camera is used as the sensor.

9. (Previously presented) Method according to claim 1, characterized in that the sensor is coupled with a position control loop of a CNC control system for the point-by-point scanning measurement of a surface of the object.

10. (Previously presented) Method according to claim 1, characterized in that for the purpose of achieving optical paths with different lengths, the beam proceeding from the point penetrates a piezo-electric plate, which is arranged in front of a sensor.

11. (Previously presented) Method according to claim 1, characterized in that the beam proceeding from the point penetrates flat face-plates of different thicknesses that are arranged on a rotating disk.

12. (Previously presented) Method according to claim 1, characterized in that the beam proceeding from the point is directed via a tilting mirror to at least three sensors.

13. (Previously presented) Method according to claim 1, characterized in that the beam proceeding from the point penetrates a lens package of a zoom lens of the optical sensor.

14. (Previously presented) Method according to claim 1, characterized in that the optical sensor is arranged on a fastening device that comprises a piezo-element to be able to change the distance to the point.

15. (Canceled)

16. (Currently amended) Device for determining the distance of a point

(10) of an object (12) to a specified ~~reference point such as~~ a sensor (14, 20, 22) by measuring contrast values of the point depicted in the working plane of the sensor~~,~~ ~~in particular~~ for a scanning profile determination of a material surface with a coordinate measuring instrument, wherein an optical system~~, which~~ comprises the sensor and is arranged in a probe that is displaceable relative to the object surface, is adjusted in relation to the object, and wherein from the position of the optical system in relation to the object the distance <u>or</u> ~~and/or~~ its profile is determined, wherein in the imaging beam path of the optical system the contrast values of the depicted point are measured at the ends of at least two optical paths of different lengths,

characterized in that in the imaging beam path of the optical system at the end of at least ~~three~~ <u>two</u> optical paths of different lengths, at least one sensor (14, 20, 22) is arranged for the purpose of determining the contrast distributions of the beam in dependence upon the distance to the point (10) of the object (12).

17. (Original) Device according to claim 16, characterized in that in each case one sensor (14, 20, 22) is assigned to each of the optical paths with different lengths.

18. (Previously presented) Device according to claim 16, characterized in that in front of the one sensor (14, 20, 22), optical elements are arranged for splitting the beam proceeding from the point (10) into optical paths of different lengths.

19. (Currently amended) Device according to claim 16, characterized in that

flat face-plates of different thicknesses~~, arranged matrix-like,~~ are used as the optical element.

20. (Previously presented) Device according to claim 16, characterized in that the sensor (14, 20, 22) or its working field is divided into several measuring areas for simultaneous distance measuring of various areas of the object (12).

21. (Previously presented) Device according to claim 16, characterized in that the sensor (14, 20, 22) is an image sensor or a multiple-chip camera.

22. (Previously presented) Device according to claim 16, characterized in that the sensor (14, 20, 22) is coupled with a position control loop of a CNC control system for the point-by-point scanning measurement of a surface of the object (12).

23. (Previously presented) Device according to claim 16, characterized in that for the purpose of achieving optical paths with different lengths, the beam proceeding from the point penetrates a piezo-electric plate arranged in front of a sensor (14, 20, 22).

24. (Previously presented) Device according to claim 16, characterized in that in front of the sensor (14, 20, 22) a rotating disk, which is penetrated by the beam, is arranged, on which flat face-plates of different thicknesses are located.

25. (Previously presented) Device according to claim 16, characterized in that the device contains a tilting mirror, from which the beam proceeding from the point (10) can be directed to at least three sensors (14, 20, 22).

26. (Previously presented) Device according to claim 16, characterized in that the sensor (14, 20, 22) is equipped with a lens package of a zoom lens, which

can be penetrated by the beam.

27. (Previously presented) Device according to claim 16, characterized in that the optical sensor (14, 20, 22) is arranged on a fastening device that comprises a piezo-element to be able to change the distance to the point (10).

28. (Canceled)